

Career progression of graduates in diploma for professional education

Rivika C. Alda, Helen B. Boholano, Ethel De Leon-Abao
College of Teacher Education, Cebu Normal University, Cebu City, Philippines

Article Info

Article history:

Received Feb 7, 2024
Revised Mar 21, 2024
Accepted Mar 27, 2024

Keywords:

Career paths
Career progression
Diploma in professional education
TPACK
Tracer study

ABSTRACT

This research delves into the career progression and perceptions of graduates from the Diploma in Professional Education (DPE) Program at Cebu Normal University, spanning the academic years 2016-2020. This aims to analyze demographic profiles, assess knowledge levels in various domains, and explore graduates' regard for the DPE program in their current work. Employing a mixed-methods design, the research gathers data through surveys and virtual interviews. Participants indicate an overall positive assessment of the DPE program and express strong agreement in content knowledge, pedagogical knowledge, technological competence, and the intersection of technology with pedagogy and content. They exhibit strong alignment with the technological pedagogical and content knowledge (TPACK) framework, proving their proficiency in incorporating technology into instruction with ease. Qualitative insights unveil transformative learning journeys, the nurturing of teaching excellence, overcoming challenges with confidence, and the empowerment of future educators as dominant themes in the experiences of DPE graduates. The combination of data sets highlights how well the program communicates knowledge and fosters a constructive, transformative learning environment. The DPE program's good reputation, strong support of TPACK, and noted career progression demonstrate how well it prepares teachers for the ever-changing demands of the classroom and offers valuable insights to improve teacher education.

This is an open access article under the [CC BY-SA](#) license.



Corresponding Author:

Rivika C. Alda
College of Teacher Education, Cebu Normal University
Osmeña Blvd, Cebu City, 6000 Cebu, Philippines
Email: aldar@cnu.edu.ph

1. INTRODUCTION

Education is dynamic, endlessly evolving, and creating the necessity for continuous exploration, learning, relearning, and unlearning. In light of this perpetual evolution and the ever-expanding array of opportunities, individuals as they mature often come to realize that beyond their recognized abilities and strengths lies a wealth of untapped potential. Through their daily experiences, they understand that each task completed is just one among many they are capable of undertaking.

Observationally, it becomes apparent that several degree holders, upon graduating with their baccalaureate degree, navigate a diverse range of paths. Some opt to enter into professional practice within their field, while others feel compelled to pursue further academic qualifications that better align with their evolving interests and aspirations. Consequently, it is not uncommon for individuals to seek out additional educational opportunities, such as the Diploma in Professional Education (DPE), as a means of fulfilling their desire for professional growth and development. Aside from seeing the teaching profession as nurturing and transformative, they see the need to learn and practice other skills that society needs today. There is an

increasingly important need to continue education and acquire the necessary skills to adapt to the ever-changing world [1]. This somehow prods them to see the opportunities behind taking the DPE. People all over the world and in all walks of life through the richness of opportunities the world offers tend to venture on certain endeavors which for years have been suppressed due to certain reasons. Cases show that professional degree holders in various fields in one way or another, seek solace as regards finding other areas of interest apart from their baccalaureate degree.

In the Philippines, it has been noted that many of these graduates enter the teaching profession and are fondly called second course-takers. Today, there is an increasing need to continue education and acquire the necessary skills to adapt to the ever-changing world. In Cebu Normal University (CNU), there is a DPE, a special program that prepares students who are graduates of other degree programs to become licensed professional teachers. This offers 30-unit professional education courses, thereafter, leading them to take the licensure examination for teachers (LET) and practice the teaching profession at the secondary level of the basic education curriculum. Based on observation and interviews, these professionals who are graduates of other degree programs show interest and desire to become globally competent teachers. They see the value of teachers in transforming individuals into better citizens. Continuing education centers mainly organize activities for society in the fields that have gained importance in improving individuals with a view of career building, improving professional knowledge and skills, achieving new skills, and supplying individual development needs.

With the DPE program having been integrated into the College of Teacher Education for numerous years, the researchers endeavor to conduct a thorough investigation into the career trajectories of graduates spanning from the academic years 2016-2020. This tracer study is designed to meticulously evaluate how alumni perceive the curriculum vis-à-vis their current professional endeavors, while also assessing the proficiency of their technological pedagogical and content knowledge (TPACK). While prior research has examined the demographic characteristics and workplace environments of graduates, the specific focus on TPACK skills remains a novel aspect yet to be explored.

TPACK underscores the crucial intersection of technological knowledge, pedagogical strategies, and content expertise [2]. Moreover, by delving into the professional trajectories of DPE graduates, the study intends to reveal patterns and trends in their career development, shedding light on the practical impact of their specialized education. This holistic approach considers not only their pedagogical and technological competencies but also the tangible outcomes of their participation in the DPE program. The goal of this study is to provide crucial information on how well the DPE program prepares teachers for the ever-changing needs of the teaching profession. In essence, it serves as a comprehensive exploration, intertwining assessments of both TPACK and career progression to offer a comprehensive grasp of how DPE graduates navigate their roles in the constantly changing field of education.

This study seeks to trace the career progression of DPE graduates academic year 2016-2020. Specifically, this determines i) The demographic profile of these graduates along baccalaureate degree, years of experience, LET performance rating, attendance to seminars/training; ii) The level of the respondents in terms of content knowledge, pedagogical knowledge, technological competence, pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK), and TPACK; and iii) Their regard of the DPE program to their current work experience.

The state of the teaching profession is always an “urgent” concern in the country as it recognizes the crucial role of education in nation-building. The success of an educational system is highly reliant on a lot of factors one of which is teacher quality. It has been recognized as the most important factor in the success of any school. It is directly linked with student achievement and success [3], [4]. Teacher quality is vital in producing high-quality teaching. It is for this reason that there have been several recommendations and policy initiatives being introduced along with recruiting, selecting, inducting, and sustaining highly qualified and effective teachers [5]. To ensure that those in the teaching profession meet the requirements, the Commission on Higher Education (CHED) Memorandum Order No. 11 s. 2009 strengthened the provisions for non-education degree holders aspiring to be teachers. This includes completing 18 units of professional education courses and 12 units of experiential learning courses to qualify for the board licensure examination for professional teachers.

For the past years, there has been a notable increase in enrolment and graduates in teacher education programs. This can also be attributed to the several basic education reforms made like the full roll-out of mandatory kindergarten and the additional 2 years in the form of senior high school [6]. The CHED has noted that education programs (elementary and secondary) are among the 10 most populated programs in terms of enrolment and graduates for the school year 2017-2018 and 2019-2020. This made teacher education among the list of priority disciplines in higher education. Just for the years 2010-2016, including the years of implementing K to 12, the Department of Education (DepEd) reported that they have hired over 195,000 teachers for kindergarten and elementary [7]. Moreover, in CNU, enrollment in the College of Teacher Education has increased over the last 5 years noting the same trend in the DPE Program.

However, from this handful of graduates, only 50-60% of the first takers and 20% of the repeaters will pass the licensure examination [7]. Even then, the number of teacher education graduates and licensed professional teachers is more than the demand for teachers based on the unfilled teaching positions in the public schools (as of the school year 2019-2020). In the case of CNU, the university has noted a 100% passing percentage of first takers of DPE graduates from the school year 2017-2018 and 2018-2019.

The graduates' performance in the LET has been considered a brand of educational quality and a key performance indicator for quality assurance [8]. Thus, teacher education institutions see to it that their graduates would do well in this examination. Strengthening pre-service teacher preparation programs has been identified as one way to ensure that institutions produce competent teachers in both content and pedagogy [9]. Extensive content, pedagogy, and technology training are essential to prepare teachers for such daunting tasks. CHED has stipulated that for DPE pre-service teachers, the 18 units of professional education courses will be distributed according to theories and concepts courses (6 units), and methods and strategies with educational technology (12 units). The remaining 12 units will be for experiential courses like field study and teaching internships. On-the-job training is crucial for pre-service teachers as this may result in a wide variance in teacher capabilities [10].

Consequently, although passing the licensure examination can be linked to the DPE graduates' acquired competencies and the institutions' overall performance, it may not entirely determine the quality of teaching once these teachers are already in the field. Researchers claim that teacher quality is determined by a complex relationship among several factors like teacher preparation programs and degrees and teacher experience [11], [12], teacher coursework, teacher certification [3], [12]–[14], teachers' test scores [13], strategic teacher professional development [15], and teacher effectiveness about quality teaching indicators [5], [16].

Literature on teacher quality also supports the need for effective in-service training for professional development and in enhancing work performance and motivation [17], [18]. With the changes in the educational landscape, teachers must keep abreast with new teaching skills, practices, strategies, and perspectives [19]. There have been various initiatives and projects spearheaded by DepEd and CHED to address various aspects of teacher development. For instance, the teacher education council (TEC) designs collaborative projects that address concerns about pre-service and in-service teacher training. DepEd through the National Educators Academy of the Philippines (NEAP) puts a premium on the upskilling and reskilling of teachers and has already implemented several trainings and projects. The continuing professional development (CPD) law also ensures that professional teachers do not stop learning throughout their careers. However, even with the training afforded, teachers still report challenges and concerns. One of which is that professional development is not always aligned with the needs of teachers and the transfer from professional development activities to teachers' practices is proven to be difficult [20]. This may also become more challenging for DPE graduates who have only spent a year to complete the teacher education courses. To assist these teachers, there is a need also to determine how to improve the DPE program in the school.

Furthermore, even with several job opportunities, better pay for government teachers, and security of tenure, not everyone who took the DPE program became teachers. Some of the education graduates have opted to look for non-teaching opportunities and other employment prospects abroad. Nonetheless, there are no studies specifically conducted to trace the DPE graduates of the institution, thus this study is conceptualized.

2. RESEARCH METHOD

2.1. Research design

This study used a mixed method design which employs both qualitative and quantitative research designs. The mixed method is defined as a research design that involves the processes of gathering and analyzing data, incorporating the results and findings, and drawing interpretations and inferences employing both quantitative and qualitative methods [21]. In addition, a parallel approach is used because it helps to achieve broader outcomes by integrating both quantitative and qualitative approaches. This allows the researchers to use the strengths of both approaches and overcome the weaknesses [22]. Therefore, this study consists of two parts: quantitative and qualitative data collection. The quantitative part includes the demographic profile of these graduates and the knowledge level of the respondents along different components. For the qualitative data, an interview guide was crafted by the researchers.

2.2. Research participants

The participants of the study were DPE graduates of the College of Teacher Education-CNU from 2016-2020. Thirty-two participants answered the survey while ten participated in the virtual interview. The survey forms were converted into a Google Form and a link was sent via email and messenger. This form contained the consent and confidentiality agreement. The qualitative aspect of the paper was gathered from the virtual interview conducted by the researchers via Zoom and Google Meet.

2.3. Research instruments

The study employed a structured survey questionnaire consisting of eight sections: demographic profile, content knowledge, pedagogical competence, technological competence, PCK, TCK, and TPACK integration. Each section featured 5-10 statements, prompting participants to respond on a four-point Likert scale from strongly agree to strongly disagree. This approach facilitated a focused and efficient investigation into the study's objectives. Additionally, the researcher also used the interview guide which was corroborated by experts to get the participants' narratives and to validate their answers from the survey.

2.4. Data analysis

In analyzing the data collected from the survey, the first level of analysis involved obtaining the descriptive statistics by computing the mean and simple percentage. Descriptive statistics deal with measurements of various aspects of the population [23]. Qualitative analysis was done using Clarke and Braune's six-step process thematic analysis. Thematic analysis is a method for identifying, analyzing, and interpreting patterns of meaning (themes) within qualitative data [24].

2.5. Ethical considerations

This research guaranteed voluntary participation, with participants given the choice to accept or decline involvement after being briefed on the study's objectives, advantages, and potential drawbacks. The survey tools respected participants' privacy by not requiring the disclosure of personal information, ensuring anonymity throughout the study. To protect both participants and their data, personal identifying information remained undisclosed, preventing any external linking with other data.

3. RESULTS AND DISCUSSION

3.1. Demographic profile

Table 1 presents the demographic profile of the DPE graduates. The demographic profile of the participants in terms of their baccalaureate degrees denotes that the special program has catered to the diverse professional backgrounds of the participants. This demonstrates the participants' desires/plans to become teachers apart from their first-earned degree program.

Regarding their experience related to teaching, the data revealed that the majority of them have undergone a teaching practice while five (5) have no teaching experience at all. This is a manifestation that as the majority find value in teaching, the more they try to be better in their teaching practice. As teachers gain experience, their students not only learn more, as measured by standardized tests, but they are also more likely to do better on other measures of success, such as school attendance [25]. This simply shows that the teaching practice has helped them not only to hone their experience being with students but also that they are convinced of the total development of the students. Furthermore, these DPE graduates' knowledge, skills, and love for teaching are manifested in the 100% passing of the LET which officially enables them to teach.

The professional regulatory board (PRB) administers the exam, and its ultimate responsibility is to ensure that it meets professional, legal, and technical standards [26]. Once the candidates pass the licensing process, they are granted a license that will qualify them to put their professions into practice. These data are being reinforced by their attendance at relevant training and seminars. All of them have been exposed to training and seminars related to teaching. This shows their belief that to enhance their knowledge and skills in teaching, they need to attend professional development activities.

When teachers attend training programs, it gives them the opportunity for continuous professional development to learn new ways, methods, strategies, skills, and tools [27]. When teachers get upskilled, they automatically feel confident, happy, and motivated to achieve greater things with their students. More than that, these DPE graduates have become engaged as well in laudable undertakings like being researchers, facilitators, speakers, writers/authors, advisers, and coaches and have become members of professional organizations. All these characterize that these graduates are determined to upskill themselves in the teaching profession. They do not settle for mediocrity but commit to carving a niche in their teaching profession. Research corroborated that whether individual teachers' participation in CPD activities arises from an interest in lifelong learning, a sense of moral obligation, a felt need to enhance professional competence and to keep abreast of recent developments in their field of work, the need to comply with mandatory government requirements, or for career advancement [28], [29].

The demographic profile of the DPE graduates is therefore a showcase of how their academic background together with their various exposures can lead them to become the kind of teacher the country and the global community need today. To be successful in the teaching career, everyone needs to be up and about toward the realization of a quality education.

Table 1. Demographic profile of the DPE graduates

Demographic profile	Frequency	Percentage
Baccalaureate degree		
BS Psychology	10	31.25
BS Business Administration	1	3.13
BSC Finance	2	6.25
BS Nursing	2	6.25
BS Electronic Communication Engineering	1	3.13
BS Biology	2	6.25
BS Information Technology	3	9.38
AB English	2	6.25
BA Communication Arts	1	3.13
BSBA Marketing	1	3.13
BS Mathematics	1	3.13
BA Filipino	1	3.13
BA Political Science	2	6.25
Bachelor in Public Administration	2	6.25
BA Sociology	1	3.13
Years of teaching experience		
No experience at all	5	15.63
1-3 years	8	25
4-6 years	11	34.38
7 years and above	8	25
LET Performance Rating		
Passed	32	100
Failed	0	0
Attendance to seminars/trainings		
Induction program	10	31.25
In service training	3	9.38
Learning action cell (LAC) Sessions	8	25
ICT Training specific	8	25
Gender and Development Program (GAD) training	3	9.38
Involvement in the following undertakings		
Researcher	1	3.13
Module writer	4	12.5
LAC or Seminar facilitator	7	21.88
LAC or Seminar speaker	2	6.25
Coach	10	31.25
Book Author	0	0
Research Presenter	1	3.13
Volunteer (Community Activities)	2	6.25
School organization adviser	5	15.63
Member of Teacher Education Organization (PAFTE, SUCTE, etc.)	0	0

3.2. Graduates' content, pedagogical, and technological knowledge

Over the past two decades, the education landscape has witnessed a significant revolution, particularly in the realm of technology integration. Responding to the need for a comprehensive framework guiding the effective use of technology in teaching, [2] introduced the concept of TPACK. This framework extends [30] PCK by emphasizing the integration of technology into the teaching of explicit content. In essence, TPACK underscores the crucial intersection of technological knowledge, pedagogical strategies, and content expertise. The succeeding Tables 2-4 show the DPE graduates' TPACK which intends to reveal patterns and trends in their career development, shedding light on the practical impact of their specialized education. This approach takes into account the tangible outcomes of their participation in the DPE program in addition to their pedagogical and technological competencies.

3.2.1. Content knowledge

The ideas, tenets, connections, procedures, and uses of content knowledge are described as what a student ought to understand about a particular subject [31]. It encompasses knowledge of theories, concepts, proofs, and evidence in addition to methods and procedures for expanding this knowledge [32]. In the context of this study, these DPE graduates must have the mastery of the subject knowledge they ought to teach. Table 2 shows the participants' perceived content knowledge of the discipline or subject they are handling. Although these participants who took the DPE program are degree holders, the Philippine Regulatory Commission (PRC) assigns the specialization of these DPE graduates or unit earners for the LET. There may be a mismatch between the academic background and the assigned specialization for the LET which creates significant challenges for individuals who have completed the DPE program. Take, for example, a respondent who holds a Bachelor of Science in Commerce degree but is assigned the specialization of social studies. This means that the person, despite having a commerce background, is expected to teach a subject that may be quite

different from their original field of study. This is further supported by the respondents' self-reported perceived content knowledge. This agreement underscores the challenges faced by DPE graduates, affirming that their perceived content knowledge in the assigned specialization might indeed be limited.

In addition to these challenges, the disagreement expressed by DPE graduates regarding their knowledge of basic theories and concepts further highlights the complexity of their situation. Teaching goes beyond a mere understanding of fundamental concepts; it requires a deep comprehension of the subject matter, including its ideas, connections, and applications. Given the mismatch between their academic background and the specialization assigned for the LET, these educators may feel ill-equipped to master the intricacies of subjects outside their expertise. This mismatch not only underscores the challenges faced by DPE graduates but also emphasizes the need for comprehensive support and training programs to bridge the gap between their academic qualifications and the subjects they are tasked with teaching [17], [18].

Table 2. Content knowledge

Content knowledge	WM	Interpretation
I have sufficient knowledge in developing contents	3.2	Agree
I know the basic theories and concepts of the subject/discipline I am handling	2.45	Disagree
I know the history and development of important theories in the subject/discipline I am handling	3.11	Agree
I am familiar with recent research in the subject/discipline I am handling.	2.48	Agree
Totality	2.81	Agree

3.2.2. Graduates' pedagogical competence

On the other hand, Table 3 shows the pedagogical knowledge of the DPE students. Teachers are those who work in formal and informal educational institutions and obtain training in general knowledge, their specialized field, and pedagogical development from higher education institutions [33]. The implementation of instructional strategies that meet each student's individual needs and accommodate a variety of learning styles is known as pedagogical knowledge [34]. Strong pedagogical understanding enables educators to design engaging classrooms that improve comprehension and student involvement [35].

Developing a supportive environment in the classroom is essential to good management. This entails developing a feeling of community, establishing clear expectations for behavior, and cultivating positive relationships with students [36]. Moreover, careful planning is necessary for proactive classroom management to avoid behavioral problems. Instructors can set up routines, execute clear procedures for activities and transitions, and strategically arrange seating in the classroom [37]. Thus, effective classroom management is the result of a confluence of proactive tactics, transparent communication, and constructive relationships.

Moreover, the participants' strong agreement with the statement "I can assess student learning in multiple ways" underscores their recognition of the importance of diverse assessment methods in evaluating student progress. Effective assessment practices are essential components of pedagogical knowledge, enabling educators to gauge student understanding and tailor instruction accordingly. By embracing multiple assessment strategies, teachers can gain comprehensive insights into students' learning styles, strengths, and areas for improvement. This aligns with the notion that pedagogical knowledge encompasses not only instructional strategies but also assessment practices that cater to individual student needs and promote active engagement in the learning process. Emphasizing diverse assessment approaches reflects a commitment to student-centered teaching and fosters a supportive learning environment where all learners can thrive.

Table 3. Pedagogical competence

Pedagogical Knowledge	WM	Interpretation
I know how to assess student performance in a classroom	3.24	Agree
I can adapt my teaching based-on what students currently understand or do not understand	2.54	Agree
I can adapt my teaching style to different learners	3.23	Agree
I can assess student learning in multiple ways	3.54	Strongly agree
I can use a wide range of teaching approaches in a classroom setting	3.35	Agree
I am familiar with common student understandings and misconceptions.	2.6	Agree
I know how to organize and maintain classroom management	2.67	Agree
Totality	3.04	Agree

3.2.3. Graduates' technological competence

Tech-savvy teachers typically design more dynamic and engaging learning environments [38]. Additionally, studies indicate a favorable relationship between teachers' technology competence and students' academic success across a range of topics [39]. Table 2 implies that teachers agreed on the effective use of

technology in teaching and learning. One dynamic and important component of modern education is the technological literacy of educators. To guarantee that teachers are fully prepared to utilize technology in the classroom, efforts should be focused on removing obstacles, offering efficient professional development, and encouraging a culture of ongoing learning.

Technical literacy and competency demand an understanding of the capabilities and limitations of the technologies used to deliver thorough instruction and learning, as well as their application. Classroom technologies have advanced past their initial purpose of providing education, and now can completely change pedagogy and its subject matter [33]. As gleaned in Table 4, the teachers have technical skills in the use of technology with a weighted mean of 3.4. However, they also disagree with the statement "I know about a lot of different technologies" which suggests a potential gap in their technological literacy and competency. The focus group discussion (FGD) conducted clarified that they know how to use common digital tools used in the classroom but they do not know "a lot" of them as the statement in the questionnaire suggests. This statement may indicate a need for further support and training in integrating new and varied digital tools effectively into their teaching practices. Technology is used to assist teachers in delivering knowledge to students, to facilitate communication between teachers and students, or to offer content to students so they can do independent research on it [40]. Therefore, though chalkboards, textbooks, radios, televisions, and files have all been used for educational purposes throughout the years, none have had the same impact on the educational process as computers. It is stated that the importance of information and communication technology (ICT) is extremely evident from the educational viewpoint [41]. Thus, training in ICT needs to be recognized as essential for teaching and as an enabler of other teaching and learning practices [42].

Table 4. Technological competence

Technological knowledge	WM	Interpretation
I know how to solve my technical problems	3.1	Agree
I can learn technology easily	3.2	Agree
I keep up with important new technologies	3.2	Agree
I frequently play around the technology	2.6	Agree
I know about a lot of different technologies	2.1	Disagree
I have the technical skills I need to use technology	3.4	Agree
Totality	2.93	Agree

3.3. Graduates' pedagogical content knowledge, technological content knowledge, and technological pedagogical knowledge

Section 3.3 delves deeper into graduates' PCK, TCK, and TPK. This section specifically evaluates the DPE graduates' capacity to integrate technology into teaching practices, their familiarity with various educational technologies, and their ability to utilize technology to enhance student learning outcomes. Therefore, while section 3.2 provides a broad overview of graduates' knowledge and pedagogical skills, section 3.3 offers a more detailed analysis of their technological competencies and their implications for teaching and learning in modern educational settings.

3.3.1. Pedagogical content knowledge

The PCK of these DPE graduates as revealed in Table 5 shows that they are knowledgeable as they agree on statements that express the value of guiding students toward the development of critical and creative thinking skills. In everyday undertakings, it is common knowledge that everyone needs to carefully plan, skillfully carry out, and make wise decisions. In the academe, all the more this is needed as students are expected to be independent and responsible. "Critical Thinking prevents individuals from being susceptible to manipulation. Moreover, critical thinking allows people to solve problems more creatively, independently, and effectively" [43].

One statement however verifies if these DPE graduates can select effective teaching approaches to guide student thinking and learning in the subject/discipline, their response shows that they disagree with such a statement. This finding could be attributed to their out-of-field current employment whose general exposure is not about selecting effective approaches to guide students' thinking and learning but in other different fields remote from teaching. Finding materials that meet the needs of the course and engage learners can be difficult, especially when considering content, audience, and cost [44]. This therefore one potent reason for the DPE graduates' disagreement to the aforesaid statement. Consequently, the results highlight the importance of aligning the DPE curriculum with the practical demands of teaching, equipping graduates with the skills and knowledge needed to excel in their profession. Through continued support and mentorship, DPE graduates can develop into competent and confident educators capable of meeting the diverse needs of their students. Additionally, this finding underscores the significance of ongoing research and collaboration between academia and practice to bridge the

gap between theory and application in teacher education. By integrating real-world experiences and practical teaching strategies into the DPE curriculum, educational institutions can better prepare graduates for the complexities of modern classrooms and foster their growth as effective educators.

Table 5. Pedagogical content knowledge

Pedagogical content knowledge	WM	Interpretation
I can select effective teaching approaches to guide student thinking and learning in the subject/discipline I am handling.	2.46	Disagree
I know how to guide students' content-related problem-solving	2.58	Agree
I know how to guide students' critical thinking	3.1	Agree
I know how to guide students to make use of each other's thoughts and ideas in group work	2.89	Agree
I know how to guide students' reflective thinking	2.89	Agree
I know how to guide students in planning their learning	3.1	Agree
I know how to guide students' creative thinking	2.98	Agree
Totality	2.86	Agree

3.3.2. Graduates' technological content knowledge

The concept of technological pedagogical content knowledge (TPCK) [2] encompasses TCK. The junction of pedagogical knowledge, content knowledge, and technological knowledge is represented by TCK. It focuses particularly on the efficient ways in which educators incorporate technology into the instruction and learning of particular subject areas.

Table 6 revealed that teachers utilize learning management systems and ICT applications to manage student assessments, distribute resources, and organize course content. The strong agreement of participants with statements regarding their knowledge of various technologies related to their teaching subject/discipline suggests a significant readiness and willingness among educators to integrate technology into their instructional practices. Although they disagreed (Table 4) that they know a lot of different technologies, the former statement implies a broad and comprehensive understanding of a wide range of technologies, and the latter statements (Table 6) focus on specific types of technologies relevant to their teaching subject/discipline. Additionally, it underscores the need for educators to recognize and acknowledge their proficiency in specific technologies relevant to their teaching context, even if they may not possess expertise across a broad spectrum of technologies.

On the other hand, their awareness of ICT applications used by professionals in their discipline signifies a commitment to staying abreast of industry trends and practices [45], which can enrich classroom instruction and better prepare students for real-world applications. They can even take students on virtual field trips and demonstrate abstract topics using virtual reality (VR) simulations or augmented reality (AR) applications [46]. It also implies that these educators recognize the potential of technology to enhance the learning experience by providing access to diverse resources and facilitating interactive engagement. By knowing about technologies suitable for understanding, accessing online materials, and illustrating complex content, educators can create more dynamic and engaging lessons that cater to diverse learning styles and preferences.

Table 6. Technological content knowledge

TCK	WM	Interpretation
I know about technologies that I can use for understanding and doing activities related to the subject/discipline I am teaching.	3.9	Strongly agree
I know websites with online materials for studying my subject/discipline	3.8	Strongly agree
I know applications which are used by professionals in my discipline	3.98	Strongly agree
I know ICT applications that I can use to better understand the contents of my subject/discipline	3.88	Strongly agree
I know technologies that I can use to illustrate difficult content in the discipline	3.9	Strongly agree
Totality	3.89	Strongly agree

3.3.3. Graduates' technological pedagogical knowledge

The ongoing and swift progressions in ICT have created opportunities for teachers, curriculum designers, and instructional material creators to consistently stay informed about these emerging technologies [47]. The teacher's ability to seamlessly integrate technology into teaching and learning is also known as Technological Pedagogical Competence [48]. Table 7 shows the participants' perceived TPK. The responses from DPE graduates underscore a robust TPK among the participants. Strong agreement prevails across statements, indicating their confidence in choosing technologies that enhance both teaching approaches and students' learning. This suggests a high level of competence and adaptability in integrating technology seamlessly

into instructional strategies. Furthermore, respondents strongly agree that their teacher education program has fostered deep reflection on the impact of technology in education, demonstrating a reflective and critical mindset.

Moreover, the data reveals that DPE graduates are not only individually proficient in technological pedagogy but also exhibit readiness for leadership roles. Strong agreement with statements related to providing leadership in coordinating the use of content, technologies, and teaching approaches at the school and/or district level suggests their preparedness to share their expertise and contribute to the broader educational community. In essence, the findings highlight comprehensive and confident TPK among DPE graduates, emphasizing their capacity to integrate and lead in the dynamic intersection of technology and education.

Table 7. Technological pedagogical knowledge

TPK	WM	Interpretation
I can choose technologies that enhance the teaching approaches for a lesson.	3.9	Strongly agree
I can choose technologies that enhance students' learning for a lesson	3.88	Strongly agree
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	3.8	Strongly agree
I am thinking critically about how to use technology in my classroom	3.93	Strongly agree
I can adapt the use of the technologies that I am learning about to different teaching activities.	3.98	Strongly agree
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	3.68	Strongly agree
I can use strategies that combine content technologies and teaching approaches that I learned about in my coursework in my classroom.	3.98	Strongly agree
I can provide leadership in helping others coordinate the use of content, technologies, and teaching approaches at my school and/or district.	3.5	Strongly agree
I can choose technologies that enhance the content of a lesson.	3.88	Strongly agree
Totality	3.94	Strongly agree

3.4. Graduates' technological, pedagogical, and content knowledge

With the widespread use of technology nowadays, the TPACK model focuses on bridging the gap between pedagogical knowledge and the real-life life setting [49]. The weighted mean of 3.38 as shown in Table 8, indicating a Strongly Agree consensus among DPE graduates in response to statements assessing TPACK, reflects a notable level of confidence and competence in integrating technology into teaching practices. Specifically, participants express a strong conviction in their ability to deliver lessons that seamlessly combine subject matter, technologies, and effective teaching approaches, showcasing a holistic approach to instruction that maximizes the benefits of technological tools. Moreover, the Agree to Strongly Agree on responses to statements on using ICT as a tool for collaborative idea-sharing, reflective thinking, learning planning, problem-solving in groups, and fostering creative and critical thinking highlight the participants' comprehensive TPACK. This not only demonstrates their proficiency in using technology to enhance content delivery but also underscores their recognition of technology as a versatile tool for nurturing various cognitive skills in students. In essence, the results affirm the participants' adeptness in leveraging technology across multiple dimensions of teaching and learning in today's educational landscape.

In today's rapidly evolving digital landscape, where technological advancements continue to reshape educational paradigms, the TPACK model emerges as a crucial framework for educators to navigate the complexities of teaching and learning. As classrooms become increasingly interconnected with digital tools and resources, the TPACK model underscores the importance of not only possessing pedagogical and content knowledge but also the ability to seamlessly integrate technology into instructional practices. This integration extends beyond the mere incorporation of gadgets into lessons; rather, it entails a deep understanding of how technology can be leveraged to foster meaningful learning experiences that transcend traditional boundaries. By emphasizing the intersection of technological, pedagogical, and content knowledge, the TPACK model equips educators with the skills and confidence to adapt to the demands of modern education, empowering them to cultivate critical thinking, collaboration, and creativity among students in an ever-changing digital landscape.

Table 8. Technological, pedagogical, and content knowledge

TPACK	WM	Interpretation
I can teach lessons that appropriately combine the subject I'm handling, technologies, and teaching approaches	3.2	Agree
I know how to use ICT as a tool for sharing ideas and thinking together	3.68	Strongly agree
I know how to use ICT as a tool for students' reflective thinking.	3.66	Strongly agree
I know how to use ICT as a tool for students to plan their learning.	3.88	Strongly agree
I know how to use ICT as a tool for students' problem-solving in groups	2.86	Agree
I know how to use ICT as a tool for students' creative and critical thinking	2.98	Agree
Totality	3.38	Strongly agree

3.5. Graduates' regard of the DPE program to their current work experience

3.5.1. Theme 1: transformative learning journey

Any academic experience entails a significant journey. It involves an enormous responsibility that allows each one especially the students to grow, develop, and shine according to his/her goals. No one takes the journey alone because the entire experience is a fusion of different magnificent forces that drive a person to reach the desired destination. Everyone has a role to play in this societal journey to transform education. At CNU, this transformative journey is exemplified through the experiences of its graduates. Their testimonies reflect a profound appreciation for the holistic education provided. Each graduate emerges not just with a degree, but with a wealth of experiences that have reshaped their perspectives and empowered them for the challenges ahead. Thus, the experience of the DPE graduates is a manifestation that their academic journey at the CNU has created some breakthroughs as noted in an account of a DPE graduate/completer.

Always grateful for the extensive learning experience CNU has given me. It was meaningful, memorable, and satisfying. The quality of Teacher Education at CNU has almost always been great. (P3)

This therefore is documentation that that these graduates' experience in the university created a positive impact on them as evidenced in their meaningful, memorable, and satisfying learning journey. The impact of CNU's educational approach goes beyond the classroom. It extends into the fabric of society, shaping individuals who are not just competent professionals but compassionate leaders, committed to driving positive change. The transformative journey experienced by these graduates serves as a testament to the enduring legacy of the university and its dedication to excellence in education.

3.5.2. Theme 2: nurturing excellence in teaching

Excellence in education is not a destination but a continuous journey, requiring a blend of professional competence and unwavering dedication. It is a complex endeavor. It entails a multifaceted professional competence and wholehearted personal dedication to achieve one's aspirations. Once this becomes part of the university's culture, everyone responsibly moves toward the realization of the vision and mission in the different degrees and special programs. The DPE, a special program, is afforded an equitable value. As the students start their DPE, they become conscious and immersed in the value and culture of excellence that the university stands for. Further, the university is cognizant of the actualization of the 21st century skills. Thus, this is given premium in the day-to-day classroom activities

As shared by the DPE completer/graduate,

The program enhanced my creative and critical thinking skills. It equipped me to have a better understanding of the field. Professors were dedicated, and the DPE program was engaging and fun to learn. (P5)

This account demonstrates that the university through the competent and dedicated faculty members has enhanced the essential skills that one needs to be equipped with to survive in this challenging world. Thus, it is essential to note that excellence is not an end-all. It must be nurtured by everyone in the university. Once adhered to, this becomes a system and legacy that creates an identity of the university.

Moreover, the university itself benefits from a reputation built on excellence, attracting top talent and forging partnerships that further enhance its standing in the academic community. Thus, nurturing excellence in teaching not only enriches the educational experience but also contributes to the broader societal goals of fostering innovation, equity, and progress.

3.5.3. Theme 3: overcoming challenges with confidence

The qualitative exploration of DPE graduates' experiences uncovers a prevalent theme of "Overcoming Challenges with Confidence." Their narratives, exemplified by statements like "a roller-coaster ride experience, yet fun and full of learning," depict a positive outlook on challenges in the teaching world.

It was a roller-coaster ride experience, yet fun and full of learning. Despite the challenges, CNU helped me prepare for the world of teaching. (P8)

This resilience is closely connected to their TPACK proficiency, as evident in their expressed confidence in effectively integrating technology into teaching practices. The participants reported ability to choose technologies that enhance various aspects of teaching aligns seamlessly with their narrative of overcoming challenges with confidence, emphasizing the practical impact of their TPACK skills on their teaching experiences. In tandem with these experiences, the qualitative insights highlight the crucial role of the DPE program and dedicated professors in building confidence among graduates.

The professors were excellent, and the DPE program built more confidence. (P6)

This resonates with the TPACK findings, where strong agreement is observed in statements related to the program's influence on reflective thinking, learning planning, problem-solving, and fostering creative

and critical thinking using technology. As these educators progress in their careers, the interplay between confidence, TPACK proficiency, and the ability to navigate challenges emerges as a defining aspect of their professional journey, showcasing the holistic impact of a comprehensive teacher education program.

3.5.4. Theme 4: empowering future educators

In the rapidly changing educational environment of today, teachers play a more important role than before. Prospective educators must be equipped with a thorough and innovative approach to teacher training to fulfill the needs of the modern classroom. A comprehensive set of abilities should be taught to educators so they can handle a variety of learning requirements. Below are the teachers' narratives:

CNU has helped me to a great extent. Well-done professors make their students excellent, despite the many things to do. (P10)

I passed the LET because of my professors. It impacts an overview of the three subjects in the board exam. (P4)

This implies that for teachers to be ready for the classroom of the twenty-first century, technological integration in the classroom is essential [2]. Education technology should be familiar to future teachers to improve learning, involve students, and close the digital divide. The development of future teachers necessitates a multimodal strategy that incorporates various components, such as technology know-how and cultural competency. The teachers of tomorrow are ready for the opportunities and challenges presented by the changing educational landscape by putting in place comprehensive teacher training programs, encouraging cultural responsiveness, encouraging technology integration, placing a strong emphasis on social-emotional learning, offering ongoing professional development, building collaborative learning communities, and enforcing inclusive education practices.

4. CONCLUSION

Recent observations and findings suggest that the DPE program has equipped its graduates with the competencies called for in the teaching profession except for their technological knowledge which needs reinforcement. This therefore provides conclusive evidence that intensive training in technologies and incorporating it into instructional practices is paramount in ensuring that education in this era of technology remains relevant and responsive to the needs on the ground. The convergence of quantitative and qualitative data paints a cohesive picture of a teacher education program that not only imparts knowledge but also fosters a positive and transformative learning environment. The graduates' high appreciation for the DPE program, strong support of TPACK, and reported career advancement all highlight how effective the curriculum is at preparing teachers for the ever-changing demands of the teaching profession. The present study provides significant contributions to improving teacher education programs by highlighting the interdependence of information, competencies, and life-changing experiences in molding the trajectory of future educators.

This study explored a comprehensive analysis and description of the career progression of graduates of the DPE program. Although the program is generally effective, in-depth studies may be conducted to confirm its findings, especially on the reinforcement of technological knowledge and skills needed to enhance teaching and learning. It is also recommended that future research explore DPE graduates teaching employment outcomes/performance with feasible ways of producing global teachers who can serve as catalyzers of social transformation.

ACKNOWLEDGEMENTS

The authors would like to thank the DPE graduates of the institution who willingly shared their time and took part in this study. They would also like to extend their gratitude to Cebu Normal University for funding the conceptualization and publication of this paper.

REFERENCES

- [1] M. Laal, A. Laal, and A. Aliramaei, "Continuing education; lifelong learning," *Procedia - Social and Behavioral Sciences*, vol. 116, pp. 4052–4056, Feb. 2014, doi: 10.1016/j.sbspro.2014.01.889.
- [2] P. Mishra and M. J. Koehler, "Technological pedagogical content knowledge: a framework for teacher knowledge," *Teachers College Record: The Voice of Scholarship in Education*, vol. 108, no. 6, pp. 1017–1054, Jun. 2006, doi: 10.1111/j.1467-9620.2006.00684.x.
- [3] R. Seebruck, "Teacher quality and student achievement: a multilevel analysis of teacher credentialization and student test scores in California high schools," *McGill Sociological Review*, vol. 5, pp. 1–18, 2015.
- [4] D. Goldhaber, "In schools, teacher quality matters most: today's research reinforces Coleman's findings," *Education Next*, vol. 16, no. 2, pp. 56–62, 2016, [Online]. Available: <https://www.educationnext.org/in-schools-teacher-quality-matters-most-coleman/>
- [5] C. Belsito, "The importance of teacher quality and quality teaching on academic performance," *Journal of Student Engagement: Education Matters*, vol. 6, no. 1, pp. 28–38, 2016, [Online]. Available: <https://ro.uow.edu.au/jseem/vol6/iss1/5>

- [6] R. C. Bacus and R. C. Alda, "Senior high school teaching: a phenomenological inquiry," *Malaysian Journal of Learning and Instruction*, vol. 19, 2022, doi: 10.32890/mjli2022.19.1.9.
- [7] I. N. Generelao, G. Ducanes, K. M. Yee, and C. David, "Teacher education in the Philippines: are we meeting the demand for quality?," *Philippine Journal of Public Policy: Interdisciplinary Development Perspectives*, vol. 2022, 2022, doi: 10.54096/IENE4805.
- [8] J. T. Amanonce and A. M. Maramag, "Licensure examination performance and academic achievement of teacher education graduates," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 9, no. 3, pp. 510–516, Sep. 2020, doi: 10.11591/ijere.v9i3.20614.
- [9] D. N. Harris and T. R. Sass, "Teacher training, teacher quality and student achievement," 2007. [Online]. Available: <https://files.eric.ed.gov/fulltext/ED509656.pdf>
- [10] S.-Y. Kim, "The effect of teacher quality on student achievement in urban schools: a multilevel analysis." University of Texas at Austin, 2015. [Online]. Available: <https://repositories.lib.utexas.edu/server/api/core/bitstreams/b35ffdc2-e230-47cc-9e8d-fd6db354c87d/content>
- [11] N. Burroughs *et al.*, "A review of the literature on teacher effectiveness and student outcomes," in *IEA Research for Education*, Vol. 6., Springer, 2019, pp. 7–17. doi: 10.1007/978-3-030-16151-4_2.
- [12] A. Toropova, S. Johansson, and E. Myrberg, "The role of teacher characteristics for student achievement in mathematics and student perceptions of instructional quality," *Education Inquiry*, vol. 10, no. 4, pp. 275–299, Oct. 2019, doi: 10.1080/20004508.2019.1591844.
- [13] J. K. Rice, *Teacher quality: understanding the effectiveness of teacher attributes*. Economic Policy Institute, 2003.
- [14] L. Goe, "The link between teacher quality and student outcomes: a research synthesis," 2007. [Online]. Available: <https://gtlcenter.org/sites/default/files/docs/LinkBetweenTQandStudentOutcomes.pdf>
- [15] K. Rowe, "The importance of teacher quality as a key determinant of students' experiences and outcomes of schooling," in *2003 - Building Teacher Quality: What Does The Research Tell Us?*, ACER researchers, 2003. [Online]. Available: https://research.acer.edu.au/research_conference_2003/3/
- [16] M. Akram, "Relationship between students' perceptions of teacher effectiveness and student achievement at secondary school level," *Bulletin of Education and Research*, vol. 41, no. 2, pp. 93–108, 2019.
- [17] C. M. Z. C. Omar, "Need for in-service training for teachers and it's effectiveness in school.," *International Journal for Innovation Education and Research*, vol. 2, no. 11, pp. 1–9, Nov. 2014, doi: 10.31686/ijer.vol2.iss11.261.
- [18] E. F. Osamwonyi, "In-service education of teachers: overview, problems and the way forward," *Journal of Education and Practice*, vol. 7, no. 2, 2016, [Online]. Available: <https://files.eric.ed.gov/fulltext/EJ1115837.pdf>
- [19] S. Tzivinikou, "The impact of an in-service training program on the self-efficacy of special and general education teachers," *Problems of Education in the 21st Century*, vol. 64, pp. 95–107, 2015, [Online]. Available: http://www.scientiasocialis.lt/pec/node/files/pdf/vol64/95-107.Tzivinikou_Vol.64.pdf
- [20] B. De Wever, R. Vanderlinde, M. Tuytens, and A. Aelterman, *Professional learning in education: challenges for teacher educators, teachers and student teachers*. Lannoo Publishers, 2009. [Online]. Available: <https://library.oapen.org/bitstream/id/a7eba1c5-cf38-4c2e-9575-c104d05b4830/639595.pdf>
- [21] A. Tashakkori and J. W. Creswell, "Editorial: exploring the nature of research questions in mixed methods research," *Journal of Mixed Methods Research*, vol. 1, no. 3, pp. 207–211, Jul. 2007, doi: 10.1177/1558689807302814.
- [22] A. Atif, D. Richards, and A. Bilgin, "A student retention model: empirical, theoretical and pragmatic considerations," in *ACIS 2013 Proceedings, AIS Electronic Library (AISeL)*, 2013. [Online]. Available: <https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1140&context=acis2013>
- [23] P. J. Bickel and E. L. Lehmann, "Descriptive statistics for nonparametric models iv. spread," in *Selected Works of E. L. Lehmann*, Boston, MA: Springer US, 2012, pp. 519–526. doi: 10.1007/978-1-4614-1412-4_45.
- [24] J. Caulfield, "What is ethnography? | definition, guide and examples," Scribbr. Accessed: Jan. 17, 2024. [Online]. Available: <https://www.scribbr.com/methodology/ethnography/>
- [25] A. Podolsky, T. Kini, and L. Darling-Hammond, "Does teaching experience increase teacher effectiveness? a review of us research," *Journal of Professional Capital and Community*, vol. 4, no. 4, pp. 286–308, Oct. 2019, doi: 10.1108/JPC-12-2018-0032.
- [26] E. L. Abao, J. A. M. Petancio, J. M. P. Sanchez, and G. G. Sumalinog, "Performance of beginning teachers in the licensure examination for teachers: a national study," *Frontiers in Education*, vol. 8, Sep. 2023, doi: 10.3389/feduc.2023.1240658.
- [27] F. Dayagbil and R. Alda, "Continuing professional development opportunities: teachers' motivation and perceived effectiveness," *International Journal of Education and Practice*, vol. 12, no. 3, pp. 584–595, Apr. 2024, doi: 10.18488/61.v12i3.3733.
- [28] L. Golding and I. Gray, "Continuing professional development - a brief guide," British Psychological Society. Accessed: Jan. 10, 2024. [Online]. Available: <https://www.bps.org.uk/psychologist/continuing-professional-development-brief-guide>
- [29] M. Jasper, *Professional development, reflection and decision-making in nursing and healthcare*, 1st ed. Wiley-Blackwell, 2006.
- [30] L. S. Shulman, "Those who understand: knowledge growth in teaching," *Educational Researcher*, vol. 15, no. 2, pp. 4–14, Feb. 1986, doi: 10.2307/1175860.
- [31] M. Özden, "The effect of content knowledge on pedagogical content knowledge: the case of teaching phases of matters," *Educational Sciences Theory & Practice*, vol. 8, no. 2, 2008.
- [32] Y. Hartati, A. Permasari, W. Sopandi, and A. Mudzakir, "Relationship between content knowledge and general pedagogical knowledge on pedagogical content knowledge," *Journal of Physics: Conference Series*, vol. 1157, p. 42045, Feb. 2019, doi: 10.1088/1742-6596/1157/4/042045.
- [33] I. Y. Kazu and P. Erten, "Teachers' technological pedagogical content knowledge self-efficacies," *Journal of Education and Training Studies*, vol. 2, no. 2, Jan. 2014, doi: 10.11114/jets.v2i2.261.
- [34] L. Darling-Hammond, M. E. Hyler, and M. Gardner, "Effective teacher professional development," 2017. [Online]. Available: https://learningpolicyinstitute.org/sites/default/files/product-files/Effective_Teacher_Professional_Development_REPORT.pdf
- [35] S. M. Brookhart, "Graded achievement, tested achievement, and validity," *Educational Assessment*, vol. 20, no. 4, pp. 268–296, Oct. 2015, doi: 10.1080/10627197.2015.1093928.
- [36] J. Brophy, "History of research on classroom management," in *Handbook of classroom management: Research, practice, and contemporary issues*, C. M. Ever., Lawrence Erlbaum Associates, 2006, pp. 17–43.
- [37] H. M. Egeberg, A. McConney, and A. Price, "Classroom management and national professional standards for teachers: a review of the literature on theory and practice," *Australian Journal of Teacher Education*, vol. 41, no. 7, 2016, [Online]. Available: <http://ro.ecu.edu.au/ajte/vol41/iss7/1>.

- [38] J. Voogt, O. Erstad, C. Dede, and P. Mishra, "Challenges to learning and schooling in the digital networked world of the 21st century," *Journal of Computer Assisted Learning*, vol. 29, no. 5, pp. 403–413, Oct. 2013, doi: 10.1111/jcal.12029.
- [39] P. A. Ertmer, A. T. Ottenbreit-Leftwich, O. Sadik, E. Sendurur, and P. Sendurur, "Teacher beliefs and technology integration practices: a critical relationship," *Computers & Education*, vol. 59, no. 2, pp. 423–435, Sep. 2012, doi: 10.1016/j.compedu.2012.02.001.
- [40] T. C. Hammond and M. M. Manfra, "Giving, prompting, making: aligning technology and pedagogy within tpack for social studies instruction," *Contemporary Issues in Technology and Teacher Education (CITE Journal)*, vol. 9, no. 2, pp. 160–185, 2009.
- [41] H. B. Boholano, "IMT skills of the pre-service teachers in Cebu city," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 7, no. 3, p. 212, Sep. 2018, doi: 10.11591/ijere.v7i3.14203.
- [42] W. R. Alda, G. C. Elejorde, and R. C. Alda, "Techmentoring program: a school-based ict initiative for teachers," *Journal of Research, Policy & Practice of Teachers & Teacher Education*, vol. 12, no. 2, pp. 82–97, Nov. 2022, doi: 10.37134/jrptte.vol12.2.6.2022.
- [43] R. J. Sternberg and D. F. Halpern, *Critical thinking in psychology*. Cambridge University Press, 2020. doi: 10.1017/9781108684354.
- [44] National Research Council, Division of Behavioral and Social Sciences and Education, Board on Science Education, and Committee on Undergraduate Science Education, *Science teaching reconsidered: a handbook*. National Academies Press, 1997.
- [45] V. M. Bradley, "Learning management system (LMS) use with online instruction," *International Journal of Technology in Education*, vol. 4, no. 1, p. 68, Dec. 2020, doi: 10.46328/ijte.36.
- [46] B. Dalgarno and M. J. W. Lee, "What are the learning affordances of 3-D virtual environments?," *British Journal of Educational Technology*, vol. 41, no. 1, pp. 10–32, Jan. 2010, doi: 10.1111/j.1467-8535.2009.01038.x.
- [47] R. C. Alda, "Mobile-assisted language learning (mall) in senior high school English classes," *World Journal of English Language*, vol. 211–211, no. 13, p. 6, 2023.
- [48] M. Sintawati, V. Y. Erviana, E. Bhattacharyya, H. Habil, and L. Fatmawati, "The effect of project-based learning on technological pedagogical content knowledge among elementary school pre-service teacher," *Pegem Journal of Education and Instruction*, vol. 12, no. 2, Jan. 2022, doi: 10.47750/pegegog.12.02.15.
- [49] J. M. Santos and R. D. R. Castro, "Technological pedagogical content knowledge (TPACK) in action: application of learning in the classroom by pre-service teachers (pst)," *Social Sciences & Humanities Open*, vol. 3, no. 1, p. 100110, 2021, doi: 10.1016/j.ssaho.2021.100110.

BIOGRAPHIES OF AUTHORS



Rivika C. Alda    is an Associate Professor IV and Research chair of the College of Teacher Education, Cebu Normal University, Philippines. She teaches both undergraduate and graduate levels in the aforementioned school. She finished her Doctor of Education (CHED scholar) and Master's Degree in Education (Best Thesis) specializing in English Language Teaching at Cebu Normal University. She has published research articles that span a diverse range of topics in Education, English Language Teaching, and Educational Technology in ISI, ACL, Clarivate Analytics, and Scopus-indexed journals. She has also written books in the field of professional education and English language teaching. She can be contacted at email: aldar@cnu.edu.ph.



Helen B. Boholano    is a seasoned educator with 27 years of experience and holds the prestigious position of Professor VI at Cebu Normal University. Renowned for her extensive research contributions, she has publications in internationally refereed journals and has presented her work across multiple countries. Her prolific output is evidenced by her research citations and H-index publications. She is also an accomplished author of books in Senior High School and Professional Education. As a sought-after resource speaker, she has enriched countless seminar workshops and served as a national reviewer/lecturer for various examinations and training programs. Additionally, she has secured multiple research grants from esteemed institutions and currently serves as the Regional Chair of SUCTEA in Region 7. Helen's versatile expertise extends to accreditation, online tutoring, and training for projects like GURO 21 under SEAMEO-INNOTECH. She can be contacted at email: boholanoh@cnu.edu.ph.



Ethel De Leon-Abao    currently serves as Professor VI at Cebu Normal University, Philippines. Formerly, she held the deanship of the College of Teacher Education from 2017-2021. Her expertise spans Professional Education, English Language Teaching, and Educational Management across graduate and undergraduate programs. Actively engaged in professional associations, she holds roles such as Executive Vice President of SUCTEA, Vice-President of PAGE-7, and Board of Director of PAFTE National. Additionally, she contributes as an Assessor for RQAT, Senior Flexible Learning Tutor, and Fellow of SEAMEO INNOTECH. She is a prolific author, instructional materials creator, researcher, speaker, and mentor, with a robust publication record and impactful contributions to education. She can be contacted at email: abaoe@cnu.edu.ph.